

REMARKS

Summary of the Office Action

Claims 3, 6, 7 and 10 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claims 1, 2, 4, 5, 8, 9, 11, and 12 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Takahashi (U.S. Patent No. 6,108,139) (hereinafter “Takahashi”).

Claims 3 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi as applied to claims 1, 2, 4, 5, 8, 9, 11 and 12 above, and further in view of Nakagawa (U.S. Patent No. 3,887,269) (hereinafter “Nakagawa”).

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi as applied to claims 1, 2, 4, 5, 8, 9, 11 and 12 above, and further in view of Ward et al. (Published April 1971, “Lens Aberration Correction by Holography”) (hereinafter “Ward”).

Summary of the Response to the Office Action

Applicant has amended claims 1, 3, 6-8, 10 and 12 to differently describe embodiments of the disclosure of the instant application’s specification and/or to improve the form of the claims. Accordingly, claims 1-12 currently remain pending.

Rejection under 35 U.S.C. § 112, second paragraph

Claims 3, 6, 7 and 10 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicants have amended the subject claims to improve the form of the claims taking into account the comments provided by the Examiner at page 2 of the Office Action with regard

to this rejection. In addition, amendments have been made to claims 1, 8 and 12 to clarify that the relationship $0.2 < |f_1/f| < 0.82$ can be established in claims 3 and 10. Accordingly, Applicants respectfully submit that the claims in their current form are definite. Withdrawal of the rejections under 35 U.S.C. § 112, second paragraph is thus respectfully requested.

Rejections under 35 U.S.C. §§ 102(b) and 103(a)

Claims 1, 2, 4, 5, 8, 9, 11, and 12 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Takahashi. Claims 3 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi as applied to claims 1, 2, 4, 5, 8, 9, 11 and 12 above, and further in view of Nakagawa. Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi as applied to claims 1, 2, 4, 5, 8, 9, 11 and 12 above, and further in view of Ward.

Applicants have amended claims 1, 3, 6-8, 10 and 12 to differently describe embodiments of the disclosure of the instant application's specification and/or to improve the form of the claims. To the extent that these rejections might be deemed to apply to the claims as newly-amended, they are respectfully traversed for at least the following reasons.

Each of independent claims 1, 8, and 12 of the instant application have been amended to include features with regard to an aberration corrector (9, for example) that is composed of a plurality of optical members (9a, 9b, for example), the optical members (9a, 9b, for example) being respectively a converging lens and a diverging lens, and only one of the converging lens and the diverging lens being driven. Support for these amendments can be found, for example, at the following underlined portions of the instant application's specification:

"In contrast, Fig. 7B shows data resulted from another experiment carried out in the same situation as that for Fig. 7A, except that only one lens included in the collimator lens device was moved. In this case, it is understood that, when the thickness of the cover is changed to 70 um to have a thickness error of 30 um, it is sufficient to move the one lens in the collimator lens device by 0.65 mm in obtaining the same correction effect as the conventional one (refer to Fig. 7A)." See, page 12, lines 5-11 of the specification. See also Figs. 8 and 9 of the instant application illustrating one of the lens defined by surface numbers 2 and 3 and the other lens defined by surface numbers 4 and 5.

In addition, the specification, at page 12, lines 16-22, goes on to disclose that "[a]s described so far, the optical pickup according to the present embodiment employs the collimator lens device consisting of plural lenses (for example, two lenses) and moves only one of the plural lenses to correct a spherical aberration. Hence, compared to the conventional configuration in which the whole collimator lens is simply moved for the correction, a distance along which a lens is moved for the correction is remarkably shortened." Also, the specification, at page 13, lines 15-21 goes on to explain that "[f]urther, it is not always necessary that each lens 9a (9B) combined into the collimator lens device 9 consists of a single lens, but as shown by a modification in Fig. 8C, a plurality of lens members may form each lens 9a (9b) combined into the collimator lens device 9. Increasing the number of lenses makes it possible that a chromatic aberration attributable to the objective lens is corrected, in addition to the correction of the foregoing spherical aberration."

Applicants respectfully submit that a reason for using the terminologies "a converging lens" and "a diverging lens" is to include all possible lens coupling modes. In other words, as

disclosed in Figure 8C, as long as “a converging lens” has capability of converging a light beam, coupled lenses which are cemented by balsam or arranged closely along an optical line are to be included in the scope of the claims of the present invention. An effect of this structure is that chromatic aberration attributable to the objective lens is corrected as disclosed, for example, in the portions of the specification referred to in the foregoing discussion.

The difference of embodiments of the disclosure of the instant application, as described in the claims, and the Takahashi reference is as follows.

As disclosed in the specification of the present invention, “[c]alculating a ratio between the moved amount ΔD required when the whole collimator 2 is moved and the moved amount Δd required when only the lens 9a is moved results in:

$$\Delta D / \Delta d = 1/m^2$$

wherein a ratio m ($=f2/f1$) is a ratio between the focal length $f1$ of the lens 9a and the composite focal length f^* . See, for example, page 10, lines 22-27 of the specification.

As an actual example, Applicants respectfully submit that $\Delta D / \Delta d$ resides in-between 1.5 to 25. Therefore, the moved amount ΔD partly corresponding to the Takahashi reference is larger than the moved amount Δd according to the embodiments of the disclosure of the instant application.

Further, Applicants respectfully submit that, in the Takahashi reference, a symmetrical lens structure is employed and lenses on both sides are driven as shown in Figures 1, 3, and 4. Therefore, the structure is complicated, and control of the lenses becomes difficult.

This is partly because the major purpose of the disclosure of the Takahashi reference is to obtain enough of an aberration correction in the utilization of a symmetrical lens structure,

such as a Gauss-type arrangement, which is an expensive structure. Therefore, Applicants respectfully submit that compactness is inevitably given up as a result of the arrangement disclosed in Takahashi.

On the contrary, in embodiments of the disclosure of the instant application, such a symmetrical lens structure is not employed, and only one of the converging and diverging lenses is driven such that the optical members (9a, 9b, for example) are respectively a converging lens and a diverging lens, and only one of the converging lens and the diverging lens is moved, as specifically described in each of the newly-amended independent claims 1, 8 and 12 of the instant application.

Applicants respectfully submit that reasons for employing such a lens structure include so that the space necessary for driving the collimator lens need not be increased, so as to minimize the time required for correction, and also so as to minimize any increase of energy consumption. Thus, Applicants respectfully submit that, according to embodiments of the disclosure of the instant application, as described in the claims, it is possible to complete an operation for correcting aberration within a shorter time duration while also narrowing a required lens installation space while at the same time saving consumed energy.

Applicants respectfully submit that the structure, function and effect of the combinations described in newly-amended independent claims 1, 8 and 12 are not at all suggested or implied in the Takahashi reference, or in any of the other cited references.

Accordingly, Applicant respectfully asserts that the rejections under 35 U.S.C. §§ 102(b) and 103(a) should be withdrawn because Takahashi does not teach or suggest each feature of independent claims 1, 8 and 12, as amended. As pointed out in MPEP § 2131, "[t]o anticipate a

claim, the reference must teach every element of the claim." Thus, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. v. Union Oil Co. Of California, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987)." Similarly, MPEP § 2143.03 instructs that "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 409 F.2d 981, 180 USPQ 580 (CCPA 1974)." Furthermore, Applicant respectfully asserts that dependent claims 2-7 and 9-11 are allowable at least because of their dependence from claims 1 or 8, and the reasons set forth above. Moreover, Applicant respectfully submits that the additionally applied references to Nakagawa and Ward, with respect to claims 3, 7 and 10, do not cure the deficiencies discussed above with regard to Takahashi, whether taken separately or in any combination with each other.

CONCLUSION

In view of the foregoing, Applicants submit that the pending claims currently under consideration are in condition for allowance, and respectfully request reconsideration and timely allowance of these claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution. A favorable action is awaited.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No.

50-0573. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR
EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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Dated: September 21, 2006

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